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No name quiz

1) how far did you get on "diagnostic"?
[problem #]

2) how many problems (not exercises) did you find?

3) how many questions would you like to go over?

4) did you read the article?

5) if yes, what did you think?

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1)

$$\begin{array}{r|l} & x^2 + 1 \quad r\,0 \\ x-1 & x^3 - x^2 + x - 1 \\ & -(x^3 - x^2) \\ & 0 + x - 1 \\ & -(x - 1) \\ & 0 \end{array}$$

$(x-1)(x^2+1)$

$x^3 - x^2 + x - 1$

$\frac{1}{x-1} = (x-1)^{-1}$

$x-1 \,\overline{)\,1}$

$1.9375 = \frac{31}{16}$

$\frac{15}{8} = 1.875$

$$\underbrace{\frac{1}{1-x}}_{\text{at } x=\frac{1}{2}} = 2 = \underbrace{1 + x + x^2 + x^3}_{x=\frac{1}{2}} + \cdots$$

$\frac{1}{(1-\frac{1}{2})}$

$1 + \frac{1}{2} + \left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^3$

$$\begin{array}{r|l} & 1 + x + x^2 + x^3 + x^4 + \cdots \\ 1-x & 1 \\ & -(1-x) \\ & +x \\ & -(x - x^2) \\ & x^2 \\ & -(x^2 - x^3) \\ & x^3 \end{array}$$

Does the right hand side ever become 2?

15 <u>Nos</u> 1 <u>yes</u>

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geometric sequence → common ratios

$$1+\frac{1}{2}+\left(\frac{1}{2}\right)^2+\left(\frac{1}{2}\right)^3+\cdots = S$$

$$-\left(\frac{1}{2}+\left(\frac{1}{2}\right)^2+\left(\frac{1}{2}\right)^3+\cdots\right) = \left(\frac{1}{2}S\right)$$

$$= \frac{1}{2}S$$

$$1$$

$$\boxed{2 = S}$$

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$$\frac{1}{1-x} = 1+x+x^2+x^3+\cdots = \sum_{n=0}^{\infty} x^n$$

Until I hit this

add a bunch of things together

start n at 0, keep adding 1

pattern

$x^0+x^1+x^2+x^3+\cdots$

$x=\left(-\frac{1}{2}\right) = 1+\left(-\frac{1}{2}\right)+\left(-\frac{1}{2}\right)^2+\left(-\frac{1}{2}\right)^3$

$\frac{2}{3} = .625 = \left(\frac{5}{8}\right)$

$$\frac{1}{1-x} = 1+x+x^2+x^3+\cdots \qquad \left[x=2\right]$$

$-1 = 15,$ OR 31 OR 63

$$\frac{1}{1-1} = 1+1+1+1+1+1+\cdots$$

?

$\frac{1}{1-x}$ converges to $\sum_{n=0}^{\infty} x^n$

when x is $-1<x<1$

$$\frac{1}{1-(-1)} = 1+(-1)+(-1)^2+(-1)^3+\cdots$$

$+(-1)^4+(-1)^5+(-1)^6$

$\frac{1}{2} = 0$ OR 1 OR 0 OR 1 OR 0 OR 1

$x^2 = -1$

Complex #s

$a+bi$

$i = \sqrt{-1}$

$-i = -\sqrt{-1}$

imaginary

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2) $(2x+y)(y-3x)$

$(10+1)(20+7)$

$(\cancel{2x+y})(\cancel{y-3x+}1)$

$2xy-6x^2+y^2-3xy$

$-6x^2+y^2-xy$

3) $\left(\frac{1}{x}+3\right)\left(5+\frac{2}{x^2}\right)$

$\left(\frac{1}{x}\right)(5)+\left(\frac{1}{x}\right)\left(\frac{2}{x^2}\right)+(3)(5)+(3)\left(\frac{2}{x^2}\right)$

$\frac{5}{x}+\frac{2}{x^3}+15+\frac{6}{x^2}$

$= 5x^{-1}+2x^{-3}+15x^{0}+6x^{-2}$

$c_0+c_1x^1+c_2x^2+c_3x^3+\cdots = \sum_{n=0}^{?} c_nx^n$

? degree of polynomial

$a^m a^n = a^{m+n}$ $3^2\cdot 3^7=(3\cdot 3)(3\cdot 3\cdot 3\cdot 3\cdot 3\cdot 3\cdot 3)$

$\frac{a^m}{a^n}=a^{m-n}$ $a^{-n}=\frac{1}{a^n}$

$a^0=1$ $\frac{1}{a^{-n}}=a^n$

$a^1=a$

$(a^m)^n=a^{mn}$ $(a^3)^2=(a^3)(a^3)=a^6$

$a^{\frac{1}{m}}=\sqrt[m]{a}$ $\left[\left(a^{\frac{1}{m}}\right)^m=a^1=a\right]$

$a^{\frac{n}{m}}=\left(\sqrt[m]{a}\right)^n=\sqrt[m]{a^n}$

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4) midpt of $(-2,1) \to (4,5)$

$$= \left(\frac{4+-2}{2}, \frac{1+5}{2}\right) = (1,3)$$

midpt b/t (x_1, y_1) and (x_2, y_2)

is $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

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